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ABSTRACT

This paper considers the ethical issues of the field of information science, particularly as they relate to the questions raised by the production, storage, dissemination, and use of specialized information through electronic devices, i.e., "reference databases" as well as "source databases." The topics considered include various aspects of ethics in research, in the teaching of information science, and in information work, including confidentiality of information, bias of information presented, and ethical problems encountered by information brokers and online vendors. In addition, the broader social implications of computer technology are considered within the proposed framework of "communicative ethics." (42 references and notes) (EW)

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Moral Issues in Information Science

Rafael Capurro

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MORAL ISSUES IN INFORMATION SCIENCE

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Introductory Remarks

The following ideas on moral issues in information science have two sources: the article by B.J. Kostrewski and Ch. Oppenheim "Ethics in information science" (1), and some observations by Stephan Schwarz (Royal Institute of Technology Library, Sweden) on my paper "Ethical problems in the field of specialized information and communication" (2). First I will refer to this background which can provide, I think, a general approach to the moral issues in this field. In the second part, I intend to present some of the latest discussions on these matters as recorded in information science literature. I shall pay particular attention to the questions raised by the production, storage, dissemination, and use of specialized information through electronic devices ("reference data bases" as well as "source data bases") (3). Nevertheless, this does not exclude more general aspects concerning, for example, the broad social implications of computer technology. These broad aspects of information science ethics can be discussed, I suggest, within the framework of "communicative ethics", to which I shall refer in the conclusion.

I. The background

1. The paper by Kostrewski and Oppenheim

In the "Editorial" introducing the publication of "Ethics in Information Science", Alan Gilchrist expresses the hope of promoting "some debate on whether information scientists can afford morals and, if so, whether they can translate such ideas into a practical code which can avoid pious sentiment on the one hand, and unenforceable dogma on the other" (4). This clear distinction between the debate of ethical problems, and the elaboration of a professional code of ethics could quite profitably be emphasized. It will occupy us later on in this pecture.

Concerning the content of the paper itself, the editor critically remarks that it is difficult to identify its aim, since the argument goes off in all directions. This dispersion should come as no great surprise if one considers that the authors, as they themselves at the very beginning remark, are discussing questions which until then, i.e. until 1980, were not found on the front pages of the current information science literature. This situation has, in my opinion, only slightly changed since then. As a contrast, the authors point to the evolution of american codes of practice in the field of Librarianship. Following topics are considered:

a) Ethics in research:
   - Intellectual dishonesty (or "cheating") in information science research is not a main ethical issue to be discussed, due mainly to the nature of research findings in this science, which still lacks its own theoretical foundation and whose empirical findings are (still) relatively few in comparison with other sciences.
   - Giving credit to colleagues: this issue concerns questions of co-authorship as well as questions of the right to publication.
   - Areas of research that should not be attempted: the issue, raised by Belkin and Robertson (5), refers to the possible use of research results for manipulating recipients of information in the case of sender-oriented (in contrast to user-oriented) systems.

I agree with Kostrewski and Oppenheim that this point should not be underestimated, as information science is essentially concerned not only with information (or knowledge contents) but also with its use, and so empirical observations of social behaviour must be carried out.

b) Ethics in teaching of information science:
Questions concerning the influence of teaching presented in a biased manner apply, as the authors remark, to all subjects. Information science, being a discipline in its infancy, is particularly affected by these problems.

c) Ethics in information work:
This third field of investigation raises the largest and, I think, also the most specific questions. They are:
- Use (or better: abuse) of work facilities (databases, for instance) by information scientists for private purposes.
- Confidentiality of information: this point concerns the confidential treatment of requesters' data and their requests by information officers. It implies also the question of an advantageous accessibility to information on the part of information officers with respect to the layman, and the possible conflicts (also with regard to third parties) which can derive from this situation.
- Bias of information presented: this means for instance, filtering the search results to particular purposes.
- Problems of information brokers, i.e. of online-searchers, for instance if two clients ask for the same information and one of them wishes the exclusion of supply to third parties of his search results. Also pricing policies play a role here in (ethical) decisions.
- Ethical problems for on-line vendors: which must face up to problems of confidentiality regarding the correctness of the distribution of printed search results, as well as other kinds of interrelations between both parties.

- Information as power: the authors point to the broad social (and socio-political) implications of on-line information retrieval and mainly to the possibility of restriction or distortion of the information flow. They argue in favour of a wide availability of the new information techniques, while at the same time they admit that printed material, being less difficult to control, is more democratic. The possibilities of abuse or distortion make the argument more clear, that information technology (and technology in general as well as science) is not neutral or, in other words, that it always implies an ethical dimension. Within this context the authors discuss the problem of developing countries as one particular kind of underprivileged information users (6).

In conclusion, information scientists, researchers as well as practitioners, have specific ethical responsibilities within their own professional fields of research and their own working institutions as well as with regard to society in general. Concerning the question of a code of ethics, the authors want it to be prepared by a controlling professional body, something which does not exist in our profession. The article caused numerous reactions which is indeed a sign that it thematized an important issue (7). My own paper, to which I will now briefly refer, was inspired by it.

2. My own views

In my paper on the "Ethical problems in the field of specialized information and communication" I conceived the concept of "specialized information" as including all kinds of scientific, technical, economic, and societal knowledge. I described as a main characteristic of our field what A. Diemer (8) has called the "Copernican revolution" in information. This means that instead of viewing knowledge as something "ab-solute", i.e. separated from its producers and users, information science is confronted with the relativizing situation of a plurality of views and goals from which knowledge can be looked and searched upon. As N. Henrichs remarked (9), this relativity remains tacit when we use the concept of "objective knowledge", which can then be considered as "potential information".

Taking into account these two ideas, I first raised the question of the general ethical ground of information sciences ethics.

The basic principle of any ethical reflection is human freedom. This principle is related to the information and communication field for instance in the UN Charta of Human Rights (art. 19), as well as in the "Basic Law" ("Grundgesetz") of the Federal Republic of Germany (Art. 5, I, p.1). The principle of human freedom can be philosophically interpreted as the openness of human beings to each other as well as to the world which they share, as the radical possibility of talking to and hearing from each other. In this sense, freedom is something we are responsible for, because our being together in a common world can, as we all know, be completely distorted, for instance in totalitarian regimes.
As ethical questions raised by research and teaching of information science are already being considered by educational theory as well as by scientific research ethics, I concentrated my exposition on the problems of information work.

a) Ethical principles in the field of information production:
as I already mentioned, the ethical questions in this field are closely related to those of the ethics of scientific research. I found that considering the results of research produced by specialists from the point of view of their communication, authors are ethically responsible for the truthfulness and objectivity of their statements. Truthfulness means on the one hand the honest search for truth, on the other openness to criticism. Objectivity points to the degree of informativeness, which should be more a qualitative than a quantitative one, as opposed to the point of view of the information disseminator. To achieve this goal it is necessary to use the best available (information) means. This can lead to different kinds of ethical conflicts if, for instance, such means are monopolized by a person or group of persons, or they are practically not accessible, or they are explicitly eluded in order to achieve premeditated goals.

b) Ethical principles in the field of information dissemination:
In the field of information dissemination practical work is confronted with the following ethical issues:

aa) Principle of accessibility:
specialized information should be available to everyone, in contraposition for instance to political, economical or other kinds of restrictions. This is a matter of high ethical importance, if we think for instance of ethical minorities, race discrimination, conflicts between "information rich" and "information poor" nations ("information colonialism"), information conflicts between developed nations, questions of monopolies and democratic controls etc. Can a "paperless society" (or, more modestly, "paperless communication of specialized information") guarantee the "democracy" of printed media? How shall we achieve the ethical balance between oral, printed, and electronic communication?

bb) Principle of confidentiality:
this ethical field comprises all kinds of questions concerning the responsibility of information disseminators with the information themselves as well as with the protection of personal data about producers and users including search results and modifications, etc. This principle concerns also all kinds of intrusion into the private sphere of users from the side of data base producer.

cc) Principle of completeness:
in the case of a data base producer, for instance, this principle points to the possibility of information discrimination or of biased selectivity, through which users would be misled. This question concerns also the process of abstracting and indexing. At the same time it should be remembered that a data base producer is not responsible for the truth content but only for the correctness (or correct reproduction) of data. Limitations of this principle concern the problem of selectivity and valuation of knowledge contents, and the problem of what can be called "information pollution", i.e. the inflationary character of information to be coped with. Completeness is furthermore an ideal representation which can turn into ideology if one "forgets" the radical incompleteness and processuality of human knowledge as well as the many different channels through which it is being distributed.

c) Ethical principles in the field of information use:
Considering the plurality of goals users can have when they look for specialized information, the ethical questions concerning its use are very diversified indeed. In my paper, I pointed to the principles of objectivity, (qualitative) completeness, and to the search for truth. As we are accustomed to think of truth in the sense of scientific validity, I remarked the broader sense this term must have, in order to include theoretical as well as practical goals for handling information. Kostrewski and Oppenheim pointed to different possible ethical conflicts in the field of information use, like for instance, filtering of search results, misuse of information (and of information facilities) for different purposes etc.

As a conclusion, quoting Aristotle's Nichomachean Ethics (1094b), I remarked that ethics should not aim at the same kind of precision as other sciences. The ethical discourse can only give hints for personal and socially responsible action. Its two basic dangers are to fall into casuistry on the one hand, or to consider itself, in a fundamentalist manner, as a dogmatic guideline for action or as its theoretical substitute. With this latter remark I would like to join the criticisms by Stephan Schwarz, to which I shall now point.

3. The criticisms by Stephan Schwarz:

As I discussed these matters with Mr. Schwarz during a meeting some time ago, he made two basic comments on my ideas: one concerning the problem of the interrelation between general ethical statements and their practical codification, and the other regarding the nature of ethical "oughts". With regard to the first point, he stressed the intrinsic weakness of ethical codes which do not capture the essence of ethical aspects, just because ethics cannot be codified. As a commentary to his views, he metioned an article by John Ladd: "The Quest for a Code of Professional Ethics: An Intellectual and Moral Confusion" presented at a workshop of the American Association for the Advancement of Science, and which has been recently published in a book edited by Deborah G. Johnson and John W. Snapper on "Ethical Issues in the Use of Computers" (10).

In his paper, Ladd argues that due to its essential problematic character ethics cannot be codified. Ethical principles are the (temporary) result of argumentation, and they are not established by consensus or decision-making. To speak about a "code of ethics" is therefore a misleading formulation. Such codes have pros and cons: they inspire "ethical" conduct to professionals, advise and alert them, but they can also have negative side-effects, giving professionals a sense of complacency, even covering up "irresponsible" conduct, and, what is more important, they can act as a defence mechanism diverting attention from the real "macro-" and "micro-ethical" problems of the profession.

With these two concepts, Ladd points to the problems a group confronts in its relation to society, and to the problems within the group itself (including clients, colleagues, and employers). The key question for a professional society concerning ethics is not to establish a code, but to promote the discussion on ethical issues connected with its activities. Following this argumentation, Schwarz stressed the doubts he has, on whether ethical codes may cause more harm than good, since good people in the profession will not need them, and the "bad guys" will not adhere to them anyway.

I agree with Ladd's arguments concerning the difference between ethical arguments and codes. I also think that the discussion on ethical problems should be the key issue. This discussion should lead to consideration of "the inherent incompatibilities and limitations" (Schwarz) of ethical principles. The concept of "principle", having metaphysical connotations, could, indeed, be misleading if it were taken as a dogmatic ground to establishing a "code of ethics" in the sense criticized by Ladd. If principles are the result of argumentation, and therefore always open to further discussion, then they are, as the word itself expresses, not an "end" but a "beginning".... They are not absolute grounds imposed (heteronomously) as rules or laws. In this sense, and with regard to the nature of "oughts", I considered the ground on which ethical problems arise in our field, namely human freedom, as openness to each other and to the world. To talk about the "oughts" can indeed be subversive. In his paper "Research, integrity and privacy" (11) Schwarz cites the following passage from J. Weizenbaum's "Computer power and human reason":

"Some scientists, though by no means all, maintain that the domain of science is universal, that there can be nothing which, as a consequence of some 'higher' principle, ought not to be studied. And from this premise the conclusion is usually drawn that any talk of ethical 'oughts' which apply to science is inherently subversive and antiscientific, even anti-intellectual." (12)

The concepts of integrity and privacy discussed by Schwarz concern the protection of personal data I refered to under the

principle of confidentiality. Reflections on integrity presuppose, as Schwarz remarks, a reflection on "personality", "liberty", "confidence" and "respect". Privacy, as defined by Schwarz, "concerns the individual's right and ability to decide for himself what information may be communicated to, from, or about him, and the obligation of others to respect such right." Integrity "has to do with the individual's right and ability to decide and act autonomously, perhaps in particular in matters of developing and adhering to a personal morality (functioning as a 'moral agent'), and the obligation of others to respect this freedom." (13) These concepts lead to ethical problems for instance when the information freely communicated by authors is unduly manipulated by storage and retrieval processes. To quote again Schwarz:

"Even in representing and communicating purely technical or scientific data one has to be extremely careful to avoid any interpretation or application of data that is incompatible with their true significance." (14)

Taking into consideration that something like "absolute objectivity" is unattainable, the signifiance of this ethical issue is manifest.

With regard to "ethical codes" Schwarz concludes that ethical problems are too complex to be instrumentalized. Codes entail generalizations and have to ignore the question of application by the individual agent "which is after all the essential part of morality" (15). The discussion of the concept of "freedom of research" carried out by Schwarz has, I think, a similar significance and is also intrinsically related to the question of "freedom of information" and to the special problems raised by the electronic storage and dissemination of specialized information. Ethics needs to be specified in an argumentative manner in our field, if we want to deal with its problems which lack, also in this respect, empirical studies and theoretical foundations. Given the complexity of ethical matters which is distorted if reduced to generalized codes as well as to a rigid canon of apparently unequivocal and dogmatic principles, ethical discourse must be above all, and this is also underlined by Schwarz, a prudential discourse.

Prudence is a virtue, i.e. a source of action which characterizes the situation of someone which is conscious of his/her limitations.

It delimits the anti-criterion "Everything is allowed", as it makes us aware of an ambivalent situation which does not allow the schizoid unification of opposites, or the simplistic "solution" of giving one of them up. We just do not know in advance what is absolutely "good" or "bad". A prudential ethical discourse has the function of preserving the ethical sensitivity, and is therefore the condition for becoming responsible, i.e. moral within an unforeseeable future (16).

II. Moral issues in information science literature

I shall base the following exposition on the distinction made by Ladd between "macro-" and "micro-ethical" problems. The former concern, as I have already mentioned, the problems a group confronts in its relation to society. In our case it has to do with the general social implications of information technology and, in particular, of information retrieval. The topics discussed here include: post-industrial society, the relationship between "information poor" and "information rich" countries, free flow of information, privacy and media, etc. "Micro-ethical" problems are those problems arising within the group itself. The group of information workers, includes users, producers, and disseminators of specialized information. Some of the ethical problems being discussed are for instance: the question of accessibility, data security, professional ethics, (ethics of research, teaching, and information work), copyright issues, etc.

1. Macro-ethical problems

Two state-of-the-art reviews on the broad subject "Information and Society" have been published by the "Annual Review of Information Science and Technology"; one by Edwin B. Parker in 1973, and the other by Manfred Kochen in 1983 (17).

In the introduction Kochen states that the term "information", which in the 1950's, under the influence of mathematical communication theory, was expected (unrealistically, as Kochen remarks) to be distinguished from "meaning", has now (in the 1980's) come to mean "decision-relevant data". With regard to the concept of "society", it was D. Bell who characterized the post-industrial stage as information-based, i.e. as a society based on high technology which facilitates well-informed rational decision-making. Of course, as Kochen remarks, other less technocratic alternatives are possible, but it seems that no matter what, the production and communication of knowledge, and not so much the technology itself, would play the significant role in the future society. "The central theme of the discussion", says Kochen, "is that information and knowledge can help us cope with these dilemmas but only if it is balanced by human values and judgement.

It will not suffice for information professionals to have only specialized technical or professional skills (KOCHEN, 1982). They must also be humanistically englightened generalists if they are to help bring knowledge to bear on these vital issues." (18)
Kochen discusses the following six dilemmas:

a) Security and information:
two ethical dilemmas are considered. One concerns the gap between expert knowledge and the informedness of the public in matters concerning defence and security. The other point concerns the dilemma between openness or freedom of information and the constraints of national (and , as I would like to add, international!) security. The discussion on this subject has been recently critically examined in a book by Donna A. Demac under the title: "Keeping America Uninformed" (19). According to G. Russell Pipe, "a formidable challenge in the 1980s is how to reconcile the traditional principle of an open and largely unrestricted flow of information across borders with legitimate protective measures and outright protectionism." (20)

b) Employment and information:
this is a broad and (indeed) important field. In the narrow field of specialized information Kochen foresees a further development of the general trend towards end-user searching, while information specialists will take care of the design and maintenance of user-friendly systems and languages. The ethical discussion concerning the dilemma between technological change and the organization of work is of vital societal relevance.

c) Business, industry, and information:
under this heading Kochen discusses the political and economical conflicts involved in the shaping of the "information society" on the one hand, and the problem of informed decision-making in the business world on the other.

d) Planning:
here the dilemma arises when one considers the complexity of computer-based systems, and the question of their control. In the field of specialized information, we have the problem of having sufficient, planning-relevant knowledge, without being communicated

to and used by decision-makers. We simply have to remember the ecological crisis, institutional changes, problems of social health, etc.

e) Decentralization:

in the field of information retrieval we have been observing the tendency of computing centres towards an ever increasing degree of centralization. The fusion of computers through international networks is also one more step in this direction. This enables collective work and internationalization of information. Parallel to these developments, we are confronted with the growing presence of microcomputers, and the advances in the field of expert systems. At a recent conference on the application of microcomputers in information, Manfred Kochen formulated the ethical dimension of the problem with the following words:

"What, then, are the net benefits of the new technologies? Will microcomputers and associated communication media, as has the car and TV, change our lifestyles and, in retrospect, make us aware of as many negative as positive benefits? Will they restrict or expand the options for our individual choice and will they help us make more or less informed choices? On balance, will they help us become a more informed society and if so, will that help us become more human in our evolution toward a wiser and better species? That is the key question." (21)

At the same conference N. Henrichs (22) pointed in his welcoming address to the dilemma of an increasing decentralization which would bring about an irresponsible fragmentation of the world's knowledge, limiting the cooperation efforts, and creating mini-monopolies which are, in fact, in the final analysis, nothing but the reverse of the medal of large scale monopolies. The problem is complicated even more if we consider that systems transparency should not mean giving up privacy and integrity, and the confidental character of certain types of information, especially when this confidentiality is desired by the producer and/or user of the information.

f) Information overload and mismatch:
this dilemma came at the beginning of the modern information revolution, and in particular, of information retrieval with bibliographic data bases. Complex issues require complex interdisciplinary as well as integrated approaches to information. New forms of knowledge representation and processing challenge our self appraisal.

The epistemological and ethical discussions concerning the implications of research and development in the field of Artificial Intelligence are an expression of this challenge.

The internationality of information raises cultural questions, concerning for instance the problem of the information barriers (23), on the one hand, whereas it poses new problems for instance to developing countries, concerning their legitimate national rights and interests, the problems of information colonialism (or even imperialism), the threat of cultural traditions (as underlined by Victor Rosenberg (24)) etc. on the other side. (25)
The question of privacy and integrity pervades all this dilemmas. Isaac L. Auerbach (26) has recently stressed the urgent need for ethical reflection if professional responsibility towards society is to become, as it should, a topic of major concern in a society blessed and threatened by information.

2. Micro-ethical problems

Codes of ethics, or, pace Ladd, codes of practice, should not by any means be identified, as we have already seen, with the argumentative and open discussion of ethical problems within a profession. Nevertheless, they are, I think, an expression of such discussions or, in other words, they are among others one kind of response to the ethical problems with which the professionals are confronted. As a result of such inner-professional discussions the American Society for Information Science identified the following issues in 1984, where professional values or ethics play a significant role:

Downloading
Privacy (deliberate or inadvertent disclosure of files/data)
Copyright (software privacy, intellectual property, etc.)
Pricing(competition)
Computer Crime (felonious actions)
Security (protection of passwords, IDs, etc.)
Intellectual/Academic Freedom
Career Paths/Job Security/Tenure
Transborder Data Flow
Public/Private Sector (fee paid, free good, subsidy, etc.)
Client Relationships
Employer/Employee Relationships
Concealing or Falsifying Information (27)

The discussion of each one of these points, as well as of others not explicitly mentioned like, for instance, ethical responsibilities for indexers (28), or ethics in data base searching (29), goes beyond the scope of this review. I will just mention, in some detail, the codes of practice issued by the European Association of Information Services (EUSIDIC). Three have been published up to now. They deal respectively with:

1. Database and databank producers
2. Host services
3. Telecommunications for publicly-available information services

Two more on "Brokers and End Users", and "Downloading" are at the draft stage.

I should like to mention some of the points discussed by EUSIDIC members previous to the publication of the codes.

In the 1982 issue of Newsidic, EUSIDIC newsletter (30) T. M. Aitchison drew attention to the interrelations between the data base producer and author/publisher, host/online service, and user. While, for instance, the data base producer should reproduce documents (or its surrogates) accurately (I mentioned this point in my ethics paper under the principle of completeness), publishers should supply their journals regularly. Data base producers should provide data bases to selected hosts under openly-stated arrangements or, if provided generally, under the same conditions to all hosts on

the one hand, while hosts should maintain a satisfactory service providing continuous and reliable access to the data base on the other hand. With regard to usage data, they should be treated confidentially by the data base producer and, correspondingly, they should be provided by the host to the producer.

Information brokers should be permitted to make temporary storage on machine-readable form of copies of search outputs for display, but they should not distribute generally or sell copies of outputs from the data base without the permission of the data base producer.

Finally, with regard to the user, the data base producer should make every effort to ensure that the user can obtain the documents referred to on the data base, and should provide training opportunities, while the user should make full use of them, providing feedback on problems and errors encountered in the data base or in its implementation.

In the same Newsidic issue, P. Popper underlined the question of a code of conduct from the point of view of what a user can expect from online systems. He accentuates, for instance, reliable access to those data bases the user requires. There should be no interference by the telecommunication element, or by other reasons not stipulated in the contract. Users should have access to comercially offered information sources. Their data should remain confidential. Fees and dues should not be discriminatory. Their obligations concern the contract stipulations, especially with regard to exploiting (without permission) copies of data bases or duplication of search output for profit.

Finally, C. L. Citroen made some remarks for discussion of a code of conduct for information intermediaries: they should inform clients about the principles of the techniques employed, they should only accept professional assignments for which they are qualified, they should guarantee the confidentiality of information entrusted to them, they should not use passwords for other purposes than for those they were allocated, they should treat personal data confidentially, and charges should be reasonable.

EUSIDIC code of practice for data base and data bank producers comprises eight points which I resume as follows:

1. there should be a clearly stated policy with respect to the selection of material for inclusion in the data base (points 1.1 and 1.2) (cf. my "principle of completeness")
2. The information in the data base should be correct. Users and vendors should be made aware of significant errors. The responsibility for corrections lies with the producer (points 1.3, 1.4, 1.5) (cf. my "principle of completeness")
3. The principles used in creating specialised indexes should be clearly stated. Online vendors should make clear how a data base is implemented, and they should give notice to the users, when a data base is withdrawn either totally or from a particular service (points 1.6, 1.7, 1.8) (cf. my "principle of accessibility")

With regard to Host Services EUSIDIC also proposes eight rules (cf. my "principle of accessibility"):

1. Free availability of services to all potential users (points 2, 1, 2.2)
2. Personal data may be collected by hosts for different purposes (for instance on behalf of a data base producer or for legal and/or accounting purposes). It should be treated confidentially, including the data concerning end-user search strategy. All parties concerned should have full details of what information is being collected, for what purposes, who has access to it, and for how long it is retained (points 2.3, 2.4, 2.5, 2.6)
3. The host should ensure that the documentation necessary to use the system is made available to all users. If the system is internationallly available, the services (user support, documentation, and training) should be offered in different geographical locations (points 2.7, 2.8)

Finally EUSIDIC proposes ten rules concerning telecommunications for publicly-available information services:

1. It considers that the fairest bases for the calculation of telecommunication charges for a given services provided by public Administrations is on the basis of the cost of providing that service, plus a reasonable profit margin (point 3.1)

2. If data bases network required cannot for any reason be provided by public Administration, physical or legal obstacles should not be placed in the way of other bodies offering to provide the required services (point 3.2)
3. Administrations have a duty to ensure that what is connected to public networks will not harm the network or maintenance personnel. No political, geographic or economic discrimination for or against equipment should be made (point 3.3)
4. Administration should recognise that continental and inter-continental data networks are vital for many new and future information services. They should be efficient and economic. Leased circuits are an important option which should not be impeded by Administrations (points 3.4, 3.5, 3.6, 3.7)
5. The communication authority should not normally be concerned with the content of what is being carried (3.8)
6. New publicly-available data services will require the maximum of flexibility in terms of charging and access (point 3.9)
7. Administrations have the duty to attempt to satisfy many different sectors, both nationally and internationally (point 3.10)

To sum up then, we can say that all these rules aim to preserve the openness of the information flow, taking into account at the same time the protection of the personal data as well as of the legitimate interests of all parties involved in the process of producing, storing, distributing and using information.

Openness, confidentiality, accuracy, and fairness can be considered as essential ethical cornerstones in our field. But, as Ladd remarked, they should not be used to give us a sense of complacency or, what is worse, to cover "irresponsible" conduct. Professional ethics is not a "special" ethics, basically separated from "macro-" or "communicative ethics", as I suggest in the last part of this paper.

III. The paradigm of communicative ethics

Until now, I have used the terms "morality" and "ethics" as if they were synonyms. This is partly correct, if we consider that Latin thinkers, such as Cicero, translated the Greek concept of "ethiké" as "philosophia moralis" (31). In both cases the meaning originated in connection with the designation of customs, practices, and traditions ("ethe", "mores"). Since Cicero, philosophy has often been subdivided into "philosophia rationalis" or logic, "philosophia naturalis" or physics, and "philosophia moralis" or ethics.

Within the domain of ethics, which was established as a science by Aristotle, a distinction is usually made between ethics and morality. Bertrand Russel, for example, defines ethics as consisting of "general principles which help to determine rules of conduct", whereas "it is not the business of ethics to arrive at actual rules of conduct, such as: 'Thou shalt not steal'. This is the province of morals. Ethics is expected to provide a basis from which such rules can be deduced." (32) This expectation is, I believe, a misinterpretation, if one hopes to deduce the concrete historical forms of morality from their ethical foundations. If we are not to commit the "naturalistic fallacy" (G. E. Moore) of deducing moral categories from empirical (or metaphysical) concepts, then we have to presuppose that concepts such as "responsibility", "duty" etc. are to be founded on human freedom. "Ought does not follow from is", as philosophers say. Ethics is then the argumentative search for a (non-naturalistic as well as nonsubjectivistic) foundation of morality (33).

In what sense do we speak of ethics as a science, or, in other terms, how well (or mies) founded ethical reasoning can be?

In his introduction to Aristotle's Analytics W. D. Ross remarks that "Aristotle's attitude to logic is not unlike his attitude to ethics. In his study of each there is much that is pure theory, but in both cases the theory is thought of as ancillary to practice - to right living in the one case, to right thinking in the other." (34) In both cases, according to Aristotle, we start by intuitive knowledge of first principles, and combine them with (scientific) knowledge got (by induction) from sense-perception. In the field of ethics this combination is called "sophia". This Aristotelian approach fails in two respects: 1) sense-perception is not of "pure facts", but it is (as Hermeneutics would also say) interpreted perception; 2) first principles are not really so self-evident, i.e. we cannot rely ultimately on them. If there is no absolute ground for ethical reasoning, and if the perception of ethical problems is influenced by our ethical (and non-ethical) views, then all ethical discourse is necessarily hermeneutical, i.e. open to criticism, and it never substitutes the moral option itself that cannot be definitely deduced from it. According to H. G. Gadamer (35) (in implicit opposition to W. D. Ross) this was clearly seen by Aristotle, whose ethics do not rest on an absolute ground (as Plato's and Kant's) but, as I have already quoted (from Eth.Nic. 1094 b) it does not aim at the same kind of certainty as other scientific disciplines.

It is also in this sense, I think, that Stephan Schwarz criticizes the role of "ethical codes" as preconceived patterns, where "prospective responsibility" is restricted in terms of correspondence with foreseen performances. Such a view "tends to simplify and generalize real-life situations to fit them into a too narrow framework of norms and values (...) it tends to transform a dynamic morality into a static one." (36)

Schwarz suggests, as a possible remedy, a "cybernetic approach" to moral questions, within which the whole complexity of moral and nonmoral components as well as prospective and retrospective aspects should be analyzed, comparing the alternatives, and stressing the role of personal responsibility, which is not just the mechanical application of anonymous rules.

As the Belgian philosopher Gilbert Hottois recently remarked (37), prudence is the cardinal virtue of ethical reasoning, if we are to avoid the fallacies of metaphysical, technocratic, and positivistic theories which overvalue man's knowledge or power, or just aim to leave aside the perspective of enigm, and openness which characterizes not only human existence but also the technical, and, of course, the cosmic process.

In the field of information science (and technology) we need, I think, such a prudent ethics which is a communicative, and an evolutionary one. It is a communicative ethics not only because it deals with the field of (specialized) information and communication, but also because it considers communication as the medium through which the complexity of retrospective and prospective aspects in this field can be discussed. It is an evolutionary or, as we could also say, a hermeneutical ethics because it does not presuppose the clarity and validity of first principles, but it questions and criticizes them taking into account the complexity and limitations of concrete situations.

The paradigm of a communicative ethics has been further developped by the German philosophers K. O. Apel (38) and J. Habermas (39), and it has been recently put into explicit relation to our field by the sociologist G. Vowe (40). A key feature of this paradigm is the conception of an open community in which argumentation and mutual respect are the basic rules. Ideally a "universal audience" is concerned from which the actual or real communication communities are distinguished. Without going now into the details of this (transcedental) argumentation, I would like to comment, that such an "ideal" could become an ideology, if a real community aiming at its performance closes itself becoming what the French philosopher E. Levinas (41) calls a "totality", i.e. a structure which can no longer be questioned by all those communities which are excluded de facto. The ethical relation is founded, as Levinas rightly stresses, on a "face to face" basis, and not on the primacy of anonimous rules. It is, I think, this specific ethical interrelation between human beings which we want to protect, when we talk about privacy, by

preserving at the same time its openness. It would be an illusion to believe that because we have "better" communication media, we are communicating better. We could be reducing means to ends...and at the end, we could even be dominated by the communication power itself. But there is no reason for passivity or resignation, I think, if we aim at a constant and tentative clarification of the process of communication. Such a clarification should take seriously the "finite" or conjectural nature of human knowledge, which could be ethically used for promoting survival (42). The ethics of knowing, the information science ethics, is (or should be) an ethics of individual and collective responsibility towards knowledge, its production, communication, and use. A community that takes for granted a vacuum in these matters is probably oriented towards dissolution.

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